

REMARKS/ARGUMENTS

In this response, the Applicant has amended claims 1, 4, 10 and 18-20, and added claims 21-23 to particularly point out certain novel features of the present invention. The Applicant respectfully submits that the aforementioned changes do not add new matter, and that the amended and new claims are supported by the previously filed specification.

Correspondence Address

As noted in the accompanying communication, the Applicant is appointing the undersigned and the firm of Bereskin and Parr to act for him in this application, as the Applicant is a Canadian resident. Accordingly, please ensure that all further correspondence is mailed directly to the undersigned, in accordance with MPEP 403.02.

Rejection Under 35 U.S.C. §112

The Examiner has rejected claims 4-7 under 35 U.S.C. §112, second paragraph, as being indefinite because of the phrase "wing is dihedral." As suggested by the Examiner, the Applicant has replaced this phrase with the terminology "wing has a positive dihedral." Therefore, reconsideration thereof is requested.

Priority

A certified copy of the Canadian application, to perfect the priority claim under 35 U.S.C. 119(b), will be filed shortly.

Rejection Under 35 U.S.C. §102

The Examiner has rejected claims 1-5, 8-10 and 16 under 35 U.S.C. §102(b) as anticipated by Lippisch (US 3,190,582). Reconsideration thereof is requested in light of the following.

Claim 1 has been amended to include the limitation that the main wing provides the principal means for maintaining the fuselage above and out of the water. For example, the main wing is expected to provide the principal contribution to the differential buoyant force (buoyant force of wing – weight of wing) when the plane is in the water. More preferably, the main wing provides all the buoyancy necessary to support the seaplane when stationary. Lippisch does not teach such a feature, and critically and as detailed below, in the embodiments intended for use on water, always teaches the use of discreet floats or pontoons.

In particular, the Examiner argues that Figure 4 of Lippisch discloses the invention of claim 1. However, in Figure 4, “[p]ontoons 49 are attached forwardly and outboard of the airfoil 47...” (col. 3, lines 67-68). As is known in the art, a pontoon acts as a float for a seaplane. There is no teaching in Lippisch that the main wing itself provides any buoyancy effect, so as to act to principally maintain the fuselage out of the water. Instead, if the fuselage of the Figure 4 embodiment is maintained above water in a stationary position, this is due to the provision of the pontoons that are separate and distinct from the main wing. In contradistinction, claim 1, as amended, makes clear that the main wing is adapted to principally maintain the fuselage out of the water.

With respect to Figure 4, Lippisch identifies a “planning” airfoil 18, winglets 51 and pontoons 49. The winglets 51 appear to be the wing tips of the main wing, while the pontoons 49 are shown as mounted to the airfoil. It is important to note that they are a separate pair of elements that provides just one function, normally providing buoyant support when the plane is stationary. Once the plane takes off, the pontoons 49 provide no useful aerodynamic function; rather, in flight, the pontoons contribute to aerodynamic drag, reducing the performance of the plane.

It is exactly this problem, i.e., the provision of pontoons, floats and the like, that increase aerodynamic drag without contributing to aerodynamic lift, that the present invention is intended to avoid. The present invention does not provide any separate

pontoons, but instead configures an aerodynamic lift component, the main wing, to provide the necessary buoyancy in water.

With respect to Figures 5 and 6 of Lippisch, the description is somewhat brief and hard to understand. It appears that neither of these embodiments is intended for operation on water. Figure 6 clearly shows the provision of a landing gear 27 a, b and c. For Figure 5, Lippisch's column 4, line 7 makes it clear that the plane is "not equipped with floats as in the embodiment of Figure 4." Moreover, the fuselage 39 is "low in the craft relative to the wing 47" (col. 4, line 6), and appears so low as to be almost coplanar with the lowest part of the wings. As such, if the Figure 5 embodiment were to be placed on the water, the fuselage would apparently contact the water and necessarily provide some buoyancy. However, the fuselage is of conventional shape for an aircraft intended solely for use on land. Note particularly that the fuselage 39 has no step in its bottom surface that is essential if it is to take off from water. (See the discussion in the third full paragraph of page 2, the full paragraph at the bottom of page 6 and paragraph bridging pages 6 and 7 of the specification of the present application.) In summary, to the extent that Figures 5 and 6 can be understood, they both appear to be concerned with an aircraft for use on land.

There is a general comment, at column 3, lines 41-45 of the patent, that the "airfoil shape of Figure 3...could be used in...embodiments of FIGURES 4 and 5 or the embodiment of FIGURE 6, in land takeoff, seaplane and amphibian configurations." However, no detail is given as to how this could be achieved, and in any event, the consistent teaching throughout Lippisch is that, for seaplane operation, pontoons and/or the fuselage should provide all the buoyancy. There is no specific teaching of the limitation recited in the instant claim 1 that the main wing provides the principal means for maintaining the fuselage above and out of the water.

Thus, in the embodiment of Lippisch shown in Figure 5, the wings are not equipped with floats or pontoons 49. Likewise, it appears that pontoons are absent in the embodiment shown in Figure 6. Consequently, as these embodiments of Figures 5

and 6 are apparently only for use on land, Lippisch does not teach a main wing that is adapted to maintain the fuselage above and out of the water. On the contrary, and as noted above, it appears from Figures 5 and 6 that for any notional seaplane use, the planes shown in these two figures would not have their fuselages out of the water when resting therein, and if in the water, would be unable to take off due to the lack of a step to break the suction forces.

Indeed, Lippisch teaches that "fuselage 39, for example, in the embodiment of FIGURE 5, is low in the craft relative to wing 47..." (col. 4, lines 5-6). More explicitly, in a general comment, Lippisch teaches "a low slung fuselage acting as a float when the craft is in water, could be an advantage in reducing or eliminating wing tip float requirements in some seaplane or amphibian versions." (col. 3, lines 57-60). This statement is notable for two reasons: firstly, a largely conventional, and unmodified fuselage profile would not work, since as explained, it lacks the necessary step; secondly, and consistent with the rest of the teaching in Lippisch, there is no suggestion that the main wing itself could provide any of the necessary buoyancy for the aircraft.

That the fuselage, for any theoretical use as a seaplane, in the embodiments of Figures 5 and 6 of Lippisch, would not be out of the water when the plane is resting therein is not surprising. Where pontoons are absent, the buoyant force is most obviously provided by the fuselage, which is often hollow (to accept a passenger cabin, a cargo area, etc.) and therefore quite buoyant.

In summary, where the fuselage might remain above the water, Lippisch teaches pontoons as a float (Figure 4); there is an incidental reference to the fuselage acting as a float, but no disclosure of a workable embodiment. As to Figures 5 and 6, these appear not to relate to amphibious versions of Lippisch's aircraft, but just to land-based aircraft (the passage in col. 3 suggesting that the Figure 3 wing could somehow be incorporated to give, for example, a "seaplane" configuration gives no detail as to how this would be implemented). In contrast, claim 1 of the instant invention recites that the main wing is adapted to float on water and provides the principal means maintaining the

fuselage above and out of the water. Therefore, the Applicant respectfully requests that the Examiner withdraw the rejection of claim 1.

Claims 2-5, 8-10 and 16 depend from claim 1, which has been amended to recite a main wing that is adapted to float on water and principally maintain the fuselage above and out of the water. As argued above, this limitation is not taught in Lippisch. Therefore, favorable reconsideration of these claims is solicited. It is also submitted that all the claims dependent from claim 1 introduce further novel and unobvious features.

Rejection Under 35 U.S.C. §103

The Examiner has rejected claims 6, 7 and 11-15 under 35 U.S.C. §103(a) as unpatentable over Lippisch (3,190,582). Reconsideration thereof is requested in light of the following.

Claims 6,7 and 11-15 depend from claim 1, which has been amended to recite a main wing that is adapted to float on water and principally maintain the fuselage above and out of the water. Claim 1 as amended is neither taught nor obvious in view of Lippisch; a fortiori, neither are claims 6,7 and 11-15. Therefore, reconsideration thereof is requested.

Allowable Subject Matter

Claim 17 is objected to as being dependent on a rejected base claim 1. As argued above, amended claim 1 is not taught or suggested by Lippisch. Therefore, reconsideration of the objection is requested.

The Applicant thanks the Examiner for allowing claim 18. (Note that the claim has been corrected by specifying that it is the lower horizontal stabilizer that is adapted to float on water, as taught in the detailed description.)

The Examiner has objected claims 19 and 20. These two claims, as amended, depend from claim 18, which has been allowed. Therefore, reconsideration of the objection to claims 19 and 20 is requested.

New Claims

The Applicant has added new claim 21, which corresponds to previous claim 17 re-written in independent form with all the limitations of the base claim and intervening claims. The Applicant requests allowance of this claim noting that the Examiner has stated that such a claim would be allowable.

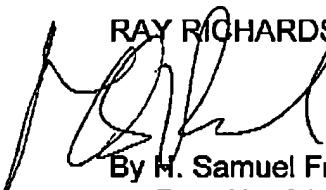
The Applicant has also added new claim 22, which recites a pontoonless main wing providing sufficient flotation to keep the fuselage substantially above water while the airplane is resting therein, as described in the fourth paragraph of the detailed description of the instant invention. Such a wing is not taught in any embodiment described by Lippisch. Therefore, favorable consideration of claim 22 is solicited.

The Applicant has also added new claim 23, which recites a main wing and a horizontal stabilizer that both provide flotation to keep the airplane afloat. Such a horizontal stabilizer is not taught in Lippisch. In particular, in Lippisch, the horizontal stabilizer 13 of Figures 1 and 6, and the horizontal stabilizer 44 of Figures 4 and 5 are the highest point of the airplane and would thus be expected to remain well clear of the water, and in any case not provide any flotation.

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Given the above remarks and arguments, the Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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